



# COUNTY OF MAUI

## 2006 REPORT ON AGRICULTURE

### **Message from Mayor Alan Arakawa**

Aloha kakou -

It is indeed my pleasure to be able to address our agricultural community through the County of Maui's 2006 Report on Agriculture.

As many of you already know, for many years I actively farmed both vegetables and hogs and I know, first hand, the struggles associated with farming operations. Today's farmers are truly a rare breed - men and women facing the daily difficulties of maintaining a viable farm and farming lifestyle. On a larger scale, corporate farming operations are also straining to sustain their agri-businesses. All are impacted by state, national and international competition.

For the past three years, my administration has endeavored to work closely with Maui County's agricultural industry to promote its products, maintain its water availability and, wherever possible, to assist with the marketing of its products.

On more than one level, it is crucial to the economy of Maui County to have a healthy, successful and viable agricultural community today and well into this century.

Among the many difficulties faced by today's farming industry is lack of total support within the community. Prior to the beginning of the last century, the majority of US citizens made their living in the growing of livestock or produce. Back then, society was more used to and therefore tolerant of the smells, smoke, dust and other "unpleasant" aspects of farming operations. Today, as the preponderance of agricultural communities give way to more "rural" settings, conflicts between the farming community and the general public have intensified.

We must have greater tolerance of our farming industries by the larger community or we will lose such valuable resources as fresh fish, fruits, vegetables, eggs and meat.

If our local agricultural community is not supported, Maui and her sister islands will become completely dependent upon food resources from the U.S. mainland.

Those of us who remember the shipping strikes of the past, remember how quickly store shelves emptied of toilet paper, rice and canned goods. What if the issue is food? What if a shipping strike interrupts the source of your next meal? One often-quoted figure is that Hawaii has only an eight-day supply of fresh food. As a famous O'ahu farmer once said: "No can eat golf balls."

Residents of the islands of Lana'i and Moloka'i can readily attest to the problems that occur when a shipping schedule is interrupted. To the residents of this county, I encourage you to support your local agricultural industries - buy Maui first! And, to the very best of my ability, I pledge to continue to assist our farming community in every way I can to grow and maintain this vital industry.



## A Message from the County's Agricultural Specialist Kenneth Yamamura

As the agriculture specialist for the County of Maui, I would like to take this opportunity to explain some of the many challenges faced by the agricultural sector on Maui. Ours is the only remaining Hawai'i county with both sugar and pineapple operations still existing as major components of its agricultural base. Yet, both operations are affected by national and international production of these commodities which, in turn, affects the profitability of their companies.



Cheaper U.S. mainland production costs affects not only livestock production within the County but diversified agriculture as well. With Maui's unemployment rate hovering around 2.6%, an available labor pool necessary to support our agriculture industries is difficult to find. In short, the ability of all agricultural producers on Maui -- from the largest to the smallest operations -- is seriously impacted. Keeping these components of the Maui economy intact is indeed a major challenge to be faced.

How then is the agricultural community dealing with this challenge? H C & S has long recognized the difficulties of producing a commodity crop as the price for sugar in the marketplace fluctuates annually. In response, H C & S has increased its marketing of natural sugar into retail markets to limit some of its commodity exposure. Also, the company will be pursuing the production of ethanol from molasses which will soon become a legally required component of the gasoline sold in Hawai'i. Furthermore, as the price of a barrel of oil heads upwards, it is not inconceivable that in the near future, H C & S will increase its stake in the production of energy in the form of increased electricity production and reduce their cane sugar production.

Maui Land and Pineapple Company, Inc. will be rebuilding its Kahului plant and scaling down its cannery. The cannery itself will be modernized to increase its efficiency. Other compatible businesses will hopefully be integrated in their modernized Kahului cannery site. By scaling down pineapple production, the need for labor would be lessened. While canned pineapple production is being reduced, sales of fresh fruit is expanding. It is the hope of ML&P that the proposed Superferry project will have a favorable effect on their crop sales in allowing for the shipment of more fresh pineapple to Oahu where it may be transported out of state more efficiently.

The County of Maui is pursuing development of a dual water line to bring untreated water to the farming community. Work on the second phase of this project is currently being implemented. Later, a large reservoir will be needed as part of the new system. Mayor **Alan Arakawa** is today engaged in an effort to gain control of water systems on Maui. If the County of Maui is successful in controlling the water infrastructure, this long term control will allow for borrowing capital to put into place many improvements to expand the availability of water resources to the agricultural community.

Without an inexpensive, reliable source of water, it will be extremely difficult for our farmers to compete with those under the state irrigation systems who pay lower rates for water.

## Pineapple is our future

by **DAVID COLE**

President & CEO, Maui Land & Pineapple Company, Inc.



Del Monte's recent announcement that the company was leaving Hawai'i sent shockwaves throughout the state's agricultural community.

Though not entirely unexpected, it was still upsetting to hear that 700 jobs would be lost and another traditional plantation town would fade away. News reporters across the nation speculated that pineapple would

be like sugar--where one company closed, and like dominos, the others followed suit.

While it is true that Hawai'i farmers cannot profitably compete in the world commodity market, we are proving our success in the more lucrative specialty market. For the past two years, our subsidiary Maui Pineapple Co., has been in transition from a purveyor of primarily canned fruit to a provider of premium fresh fruit. Achieving consistent quality and reliable delivery of our *Maui Gold* brand premium fresh pineapple increased our sales revenue by 33 percent in 2005. In fact, for the first time in several years, our pineapple operation produced a full-year profit as measured by Net Operating Income.

While this is very good news, we are aware that we are just beginning to turn a corner and there is still much work to be done.

During the coming year we will further strengthen our core pineapple business. Some of our key improvement goals include: implementation of an integrated Farm to Market supply chain, completion of our state-of-the-art Fresh Fruit packing system, continued expansion of *Maui Gold* production and sales into premium markets, improvement in data reporting capability to better manage our business, and the development of a comprehensive

*(See "Pineapple" on page 12)*

## New cultivars in the making

by **CARMEN GARDNER**

Executive Director  
Maui Flower Growers Association



In 2004, a joint project was initiated by the County of Maui Office of Economic Development and the University of Hawaii for the Maui Flower Growers Association, a non profit organiza-

tion dedicated to the promotion of the flower growing industry on Maui. The project was to acquire new cultivars, including a myriad of new tropical varieties to benefit Maui flower farmers and to expand the market locally and nationally.

Hundreds of specimens are currently being grown out by the university's agriculture department at the HC&S "low elevation" agriculture site in Puunene. Upon completion of primary research, these cultivars will be distributed to members of the Maui Flower Growers Association for further farming and marketing opportunities with the possibility of cross-breeding and expansion of cultivar varieties.

For more information on this project, call Carmen Gardner at 573-5758.



## Molokai Slaughterhouse in operation

by **ABBEY MAYER**

Manager, Molokai Livestock Cooperative

The Moloka'i Livestock Cooperative is proud to announce the full opening of its slaughter and processing facility in Ho'olehua, Moloka'i. On January 17, 2006, the facility received a positive recommendation for Grant of Inspection from the United States Department of Agriculture - Food Safety & Inspection Service (USDA-FSIS) and began stamping cattle and swine for resale on Feb. 1, 2006. The Moloka'i Livestock Cooperative plans to wholesale and retail beef and pork products, as well as develop a line of value-added meat products under the label name of Friendly Isle Meats™.

Maui County Mayor **Alan Arakawa** said, "As we work toward increasing economic development opportunities on Molokai, the County of Maui is pleased to have been a participant in helping get the slaughter house operational. Our county's agriculture specialist **Kenneth Yamamura** has worked for a number of years on this project and we are glad to see it become a reality."

The Moloka'i Livestock Cooperative's employees and Board of Directors would like to thank its many partners for their years of support and great efforts. These partners include, but are not limited to:



Department of Business, Economic Development & Tourism, State of Hawaii (DBEDT), USDA-NRCS-MAC Program, USDA-NRCS-MADP Program, Tri-Isle Resource, Conservation & Development Council, Office of Hawaiian Affairs, U.S. Dept. of Labor - Molokai Rural Development Project, U.S. Department Housing and Urban Development, Alu Like Inc., Molokai Chamber of Commerce, Kuha'o Business Center, Moloka'i Enterprise Community, and the County of Maui. Special thanks to University of Hawaii - Cooperative Extension Service, Hawaii Livestock Cooperative, Andrade's Slaughterhouse and Nakasone Slaughterhouse for their technical assistance. Mahalo nui loa to the Cooperative Membership and local volunteers who have donated countless hours of thought, effort, labor and supplies to make this operation successful now and for the future.

For more information, call the Moloka'i Livestock Cooperative at 567-6994.

## Buying local products a way to help local economy

by **JO ANNE JOHNSON**

Chair, Maui County Council Parks & Economic Development Committee

Buying local products helps to support our farming community and is a great way to take a proactive approach to sustainable economics in Maui County.

How many of us make the trip to the grocery store or the market and decide on our purchases on the basis of "cost" rather than on quality of the product. I'll admit, it may be tempting to buy the off-island strawberries versus Kula strawberries, but trust me -- the extra cost for local products is well worth it. Once you

compare the taste and freshness of the local produce, coupled with the fact that you are helping to support our local farmers, the choice becomes a statement about how we want Maui to look in 20 or 30 years.

Do we want Maui to be a model of a successful mini-farming community that emphasizes quality products at costs that are comparable to imported goods? Do we want to see our agricultural lands used to help support our economic base,

making us more self-reliant when it comes to growing our own food? Do we envision hillsides dotted with family farming operations that provide good



(See "Buying local" on page 12)



## News from the Maui County Farm Bureau

by **WARREN WATANABE**

President, Maui County Farm Bureau

It's legislative season and the Maui County Farm Bureau is busy participating in the 2006 session. We have several priority bills among which are:



- Irrigation system CIP;
- Ag Water Use Development Plan and drought mitigation funding;
- Research and development funding;
- Strengthen HRS regarding criminal agricultural property damage; and
- Invasive species control

I presented testimony on these and other issues that impact Maui agriculture and encourage everyone to participate in the process. The website for information regarding the bills as well as hearing notices is <http://www.capitol.hawaii.gov/site1/docs/docs.asp>. The legislators want to hear from farmers and ranchers so I encourage all of you to get involved.

The State of Hawaii Department of Agriculture has developed a biosecurity strategy proposal, a comprehensive plan to control and prevent invasive species. This plan includes collaboration between various sectors of the department, various state agencies, federal resources, private and public entities. We are inviting Deputy Ag Chair **Duane Okamoto** and personnel from the Plant Protection and Quarantine Division to our Strawberry Social on March 18 to share this initiative with us. Visit our website at [maui-countyfarmbureau.org](http://maui-countyfarmbureau.org) to see a copy of DOA's latest e-letter that has interesting information about invasive species trying to come into our islands.

Theft, trespassing and vandalism continue to be problems within the industry. Last year, we began discussions with the police department seeking ways to abate

the problem. We are resuming discussions with Asst. Chief **Sidney Kikuchi** to seek ways the industry and law enforcement personnel may collaborate to reduce ag crime in our County. Visit the following website to see the results of the Statewide survey estimating the costs of agricultural crime in Hawai'i <http://www.nass.usda.gov/hispeccrop/agtheft.htm>.

The County of Maui Office of Economic Development has drafted a bill to create additional enterprise zones on Maui. This is a major initiative to help business including agriculture. The proposed legislation is scheduled to be heard by the Maui County Council's Parks & Economic Development Committee shortly. This measure will provide significant incentives for those beginning new businesses as well as expanding existing businesses. Visit <http://www.hawaii.gov/dbedt/business/start-grow/enterprise-zone> for additional information on the existing program. We need your support to ensure that the zones are created on Maui -- if not, these programs will not be accessible to you.

I have been selected to serve on the Maui General Plan Advisory Committee. We have been in discussion with the Planning Department about including an agricultural element to the Plan that specifically addresses Agriculture. Mayor **Alan Arakawa** and Planning Director **Mike Foley** have been receptive. We have included a position within our FY 2007 county grant request for a part-time person to help us develop this section. We will be seeking volunteers to work with us on this important project.

Upcoming events include our strawberry social on Saturday, March 18, at 6 p.m., at Kula Community Center, the Upcountry Fair on June 10-11, and Ag Week-Maui to be held in May 2007. Stay tuned for more information.

On behalf of the members of MCFB, mahalo to Mayor **Arakawa**, the Office of Economic Development, and Agricultural Specialist **Kenneth Yamamura**, for their continued support of agriculture. Many of our efforts would not become reality without the assistance of the County of Maui.



## County of Maui 2006 Report on Agriculture

**Editors:** Kenneth Yamamura  
Lynn Araki-Regan  
Ellen Pelissero

### Contributing Writers

Mayor Alan Arakawa  
Councilmember Jo Anne Johnson  
Carl H. Bredhoff, Jr.  
David Cole  
Scott Crawford  
Carmen Gardner  
Harold Keyser  
Abbey Mayer  
Glenn L. Teves  
Warren Watanabe

*Comments, suggestions, and submissions for the monthly online newsletter are encouraged, and may be forwarded to:*

[kenneth.yamamura@mauicounty.gov](mailto:kenneth.yamamura@mauicounty.gov)  
or by calling (808) 270-7203.

## Upcoming Events

**March 18—Maui County Farm Bureau Strawberry Social, 6 p.m., Kula Community Center**

**April 27-28—Maui Community College's Ag Day**

**June 10-11—Upcountry Fair featuring products grown on Maui.**

**August 5-6—Maui Onion Festival, Whaler's Village**

**Sept. 28-Oct. 1—Maui County Fair**

**November 11—10th Annual Maui Association of Landscape Professionals' Lawn & Garden Fair, Maui Tropical Plantation**

## What is Maui Cattlemen Association's New Feed Task Force all about?

by **CARL H. BREDHOFF, JR.**  
Maui Cattlemen Association

I am excited about the establishment of the new Feed Task Force comprised of ranchers and representatives from Tri-Isle Resource, Conservation & Development Council, Inc. (Tri-Isle), County of Maui, University of Hawaii Extension Service and Hawaii Commercial & Sugar Co. (HC&S). Its purpose is twofold: (1) to provide roughage for Maui farmers and ranchers to feed to their cattle on pasture during times of drought; and (2) to supplement the diminishing supply of pineapple waste used also by the farmers and ranchers for cattle feeding.

The source of roughage that the Task Force is looking at is sugar cane leaves that are deposited on the ground when the



The first step in developing the alternative feed is the Seed Cane Harvest.

seed cane harvester goes through the field gathering "pula pula," or cane stalks, for re-planting the cane fields. The

ranchers can feed the green leaves and the plantation can burn the older, drier leaves. Hopefully, this will be a win-win situation.

This project, a joint venture with HC&S, is made possible thanks to grants provided by Tri-Isle (\$63,000), and the County of Maui Office of Economic Development (\$50,000). The monies will be used to purchase machinery to get the leaves from the sugar cane fields to the cattle in one form or another. To date, the machinery has not yet been purchased, but a small hay baler, borrowed from the University of Hawaii, will be tried in the near future.

## Molokai farmers take educational ag tour to Oregon

by **GLENN L. TEVES**  
UH-CTAHR-TPSS-Moloka'i

On June 18-23, 2005, members of Moloka'i's agricultural community traveled to Hermiston, Oregon — a major farm production area for diversified agriculture utilizing center pivot irrigation



systems—to get a new vision for Moloka'i agriculture. Hermiston is also known to have innovative forestry production and was recognized in *Newsweek* magazine

to be one of the premier wireless towns in the nation.

**Karen Holt**, executive director of the Molokai Community Service Council, coordinated the travel arrangements; funding for this tour was made available through a grant from the U.S. Department of Housing and Urban Development administered by the County of Maui Office of Economic Development, and the USDA-Natural Re-

(See "Molokai farmers" on page 11)

## Kipahulu commercial kitchen and ag facility nearing completion

by **SCOTT CRAWFORD**  
Project Coordinator, Kipahulu Ohana

A certified commercial kitchen and agricultural processing facility is nearing completion in Kipahulu.

The facility has been under construction for several years, and according to Project Coordinator **Scott Crawford**, it has been especially challenging due to the fact that the remote Kipahulu area is not connected to either the county's water supply nor the Maui Electric grid. But with persistence and some creativity, solutions have been found, and the facility is expected to be operational

in the second quarter of this year.

Once certified, the facility will be available to rent out for the value-added processing of products such as poi, salsas and dehydrated fruit that can then be marketed commercially. Farmers who may be interested in utilizing the facility are encouraged to contact Crawford at 248-8673.

The kitchen is being constructed by the Kipahulu Community Association in partnership with the Hana District Pohaku Corporation which holds the lease on the "Triangle"

at Kalena, the state land where the facility is located.

The facility has been funded by the County of Maui through several grants totaling \$105,000, plus \$36,000 from the Office of Hawaiian Affairs (Community Based Economic Development Program). In addition, the community of Kipahulu has provided approximately \$30,000 toward the project through fundraisers, plus thousands of hours of volunteer time.



## County repairs Keanae Flume essential to farmers

By KENNETH YAMAMURA

Office of Economic Development



Mayor **Alan Arakawa** and the County's Office of Economic Development celebrated the completion of the Keanae Peninsula Flume Repair project in a special ceremony held on Oct. 28, 2005.

Beginning in August 2004, OED, in partnership with Tri-Isle Resource Conservation & Development Council, Inc., funded the much-needed repair of the Keanae flume which supplies irrigation water vital to the taro farmers on the Keanae peninsula.

"Although the flume rests on Department of Land & Natural Resources lands, which are under the jurisdiction of the State of Hawaii, the county realized that repairs to the system required immediate action or the taro farmers could be lost," said Mayor Arakawa. "The existing flume was literally in danger of collapsing, which would have totally destroyed the only source of irrigation water for the taro growers.

"The last time repairs of the flume support structure was undertaken was by DLNR ten years ago," Arakawa said. "Unfortunately now, in this time of need," there were no readily available state funds to complete the repairs. We're happy that the County of Maui was able to step in and restore the concrete pier and redwood ties that support the flume."

The \$63,000 repair of the flume was completed in early September 2005. Damage to the redwood sections of the flume was caused principally by both Sonoran carpenter bees and by flash flooding which occurred in 2003. The current design utilizes blocks to create the support structure rather than relying on redwood ties.

For more information or questions about the project, contact County of Maui Agricultural Specialist **Kenneth Yamamura** at 270-7203.

## Making progress for Ag Park tenants

By KENNETH YAMAMURA

Office of Economic Development



The face of farming on Maui changed dramatically in response to the closure of the two sugar companies on Oahu. As Oahu's sugar phased out, two new large farming entities emerged and began to compete directly with similar types of produce grown on Maui. With no Young Brothers' freight charges to deal with, Oahu farmers had a decided advantage to exploit and did not miss the opportunity to do so. In response to this change in the mechanics of the produce market, many Maui farmers developed new niche markets or an Ag Tourism activity in order to stay the course and continue in farming.

One of the goals of the Office of Economic Development is to help those farmers within the Kula Agricultural Park to pursue Ag Tourism as a viable option to the existing farming operation. OED has worked to provide better signage for the park's location as well as individual signs to help visitors to the park locate specific operations. A new, restated lease was finished which helped to remove any restrictions to this type of activity. The new lease also allows individuals to assign their lots to a corporation which will help in passing on the operation from one generation to the next. Many of the tenants work very hard to develop the value of their farms, so being able to efficiently turn over the farm is very important. Recently, a metes and bounds description project was performed for the park. This type of description is a must in qualifying for a state ag loan. Because of this, in January 2006, tenants **Craig and Teena Rasmussen** qualified for the first state ag loan which utilized their Kula Ag Park lots as collateral on a mortgage. This loan will make possible the development of an Ag Tourism destination showcasing the many types of floral products grown within the Rasmussen's Paradise Flower Farm.

Another improvement to the park simply improves the efficiency of farmers. In February, an electrical project was finally installed, bringing power to all of the lots along Pulehu Road. These tenants have

(See "Making Progress" on page 12)

## New E-traffic alert system unveiled

by ELLEN PELISSERO

Public Information Officer

The Maui County Police Department, the Maui County Management Information Systems Division and the Mayor's Office of Public Information recently unveiled a new electronic road report notification system, the E-traffic Alert System.

The system provides the general public, media and visitor industry - especially its security divisions - with the most up-to-the-minute data on road closures or hazards so that all are aware of potential delays,

hazards or traffic problems that may delay or deter transit plans.

Information is available by subscription - both by e-mail and text messaging. The County encourages anyone for whom this information is important to sign up for this new county service at [www.mauicounty.gov](http://www.mauicounty.gov), and look on the left column for E-Mail Subscription services.

## CTAHR research and extension activities benefit local agricultural community

CTAHR acknowledges the generous support provided by the Mayor's Office of Economic Development & the County Council

By HAROLD KEYSER

CTAHR Maui County Administrator

### Fireweed Control: An Adaptive Management Approach

*Fireweed (Senecio madagascariensis)* is a noxious weed that infests vast acreages of pasture, rangeland and roadsides on the islands of Maui and Hawaii. In some cases, up to

60% of the vegetative cover is fireweed. In such areas, forage production is estimated to be reduced by 30-40%. Of the more than 1200 different species of *Senecio*, 25 are proven to be toxic to animals. It is strongly suspected that fireweed may also be toxic to animals.

Because of the prolific nature of fireweed (high seed production and viability, adaptability to varied environments) it is not likely that the weed will be eradicated in Hawaii in the near future. Therefore, effort needs to be put toward managing the current level of infestation. Control is important for several reasons:

- Potential toxicity to domestic animals
- Heavy infestation greatly reduce the productivity of grazing systems
- Not doing anything will only compound the current infestation to greater proportions.

There is a significant economic loss to the state through reduced carrying capacity of range and pasturelands, reduced livestock numbers, and poor animal condition.

CTAHR Cooperative Extension Specialist Mark Thorne, and Agents John Powley and Glen Fukumoto have found that successful control of fireweed in Hawaii requires the integration of various weed

management actions, including prevention, control and immediate response. Proper

grazing management of livestock is an essential component of this approach. Fireweed is the yellow-flowered plant in the above figure; continuous grazing

(left of fence-line) can result in extensive fireweed distribution, in contrast to the proper rotation of grazing and a rest period for pasture recovery (right of fence-line).

CTAHR is working with federal, state, and county agencies and private land managers to implement an adaptive management strategy, which will allow for flexibility in adjusting to changes in priorities and conditions as they develop.

### Helping to Grow Hawaiian Kalo

Dr. John Cho, a CTAHR researcher at the Maui Agricultural Research Station in Kula, has been working since 1998 to improve commercial kalo (taro) cultivars through breeding to increase resistance to pests such as taro leaf blight and aphids, to increase plant vigor and yield, and to develop new cultivars that will be attractive for the restaurant and landscaping sectors. In this program, Hawaiian kalo cultivars are being used to provide desirable corm color, low acidity, soft-rot tolerance, early maturation, and attractive leaf color. However, the genetic make-up of Hawaiian kalo cultivars is very uniform, which limits their usefulness in contributing genetic variation to a breeding program. Therefore, cultivars from India and Southeast Asia, the genetic home and area of greatest genetic diversity for kalo, are being used to broaden the genetic base and

contribute increased pest resistance and yield.

Introduced kalo from Micronesia, Palau, Indonesia, Papua New Guinea, Thailand, and Nepal are being used to increase resistance to taro leaf blight. Cultivars from Micronesia and Indonesia are being used to increase aphid tolerance. Our breeding strategy seeks to combine different sources of pest resistance to increase durability. The resulting hybrids are evaluated for desirable horticultural traits, and the best ("elite") hybrids are selected for the next cycle.

Our program has been successful in selecting elite hybrids with commercial potential only through a close working relationship between CTAHR's research and extension personnel and kalo farmers.



Fireweed (yellow flowers) is abundant in overgrazed pasture to left of fence-line, and is out-competed in a proper rotation with a rest period, as seen on the right.



Hybrid kalo variety in foreground was selected for leaf-blight resistance, and demonstrates hybrid vigor – the standard Maui Lehua variety is in the background.

Several promising elite candidates from the latest final cycle crosses have already been identified, and their potential role in commercial kalo cultivation is being evaluated.

The true measure of success for the CTAHR kalo breeding program is the acceptability and adoption of these new hybrids by the industry—the kalo growers and poi millers—and, ultimately, Hawaii's kalo corm, lū'au, and poi consumers.

### Improved Nutrient Management Systems

Maui's farmers are increasingly exposed to the global marketplace. Once distant competitors had no impact on local production operations but now stand on every farmer's doorstep. Maui's high costs of labor, land and water have led some farmers to employ higher technology to reduce production costs. One successful Maui nurs-

(See "CTAHR" on page 8)



("CTAHR" continued from page 7)



Howard's Nursery has state-of-the-art technology and has optimized its nutrient management system with assistance from CTAHR researcher Dr. Paul Singleton.

eryman, **Howard Takishita**, has taken used this route to become a more efficient producer. His automated, computer controlled greenhouse is a state of art facility that reduces labor costs and conserves water and nutrients through a sophisticated water recycling system. The specifications for optimum plant production, however, were not developed for our tropical climate.

As a result, management protocols developed in temperate climates were not adequate to produce high quality crops in this new facility. To develop better management protocols, CTAHR researcher Dr. **Paul Singleton**, located at Maui Agricultural Research Station in Kula, and Howard's nursery cooperated in an on-farm research program. Data collected from trials led to new formulation of fertilizers and to new management protocols that helped control salinity and acidity in the potted medium. Howard's product quality and longevity has increased from our cooperative effort.

#### **Reducing Rootknot Nematode (*Meloidogyne javanica*) Damage by Using Nematode Resistant Green Manure Cover Crops**

On the average, family farms in Hawai'i are less than 6 acres. With increasing cost of land these farms are forced to utilize all their land for crop production in order to stay economically solvent. It has become too expensive to keep some land in fallow as good land conservation and management practice calls for. As a result, plant pests have become a lingering problem on these farms.

One of the major problems has been the build up of resident population of rootknot nematodes in the soil. Nematodes infect plant roots and restrict their function to support health plant growth. Chemical fumigants are used to kill and lower nematode

populations. However, because fumigant residues have been found in our environment, many have been pulled off the market and others are on EPA's watch list. Farmers have been left with only a few chemical alternatives. CTAHR Cooperative Extension agent **Alton Arakaki** on Molo-kai, is evaluating green manure cover crops to combat nematodes.

Incorporating cover crops and green manure into the soil is an ancient practice that has contributed to improving crop production. Native Hawaiians used the practice to produce enough nutrition to sustain their society in isolation for many years.



Educational field day on nematode resistant cover crops.

However, pest problems can increase if the wrong cover crop is grown for green manure. Pest problems can worsen if the cover crop is also a host to the pest of your crop.

To address this problem, this project searched and screened cover crops for green manure that are resistant to root knot nematode and is conducting a field demonstration on their efficacy to manage nematodes in taro production. Selected cover crops were planted in blocks last year and in January nematode susceptible taro was planted into the blocks. It is projected that by planting selected nematode resistant cover crop in nematode infested field and then incorporating it into the soil as green manure will lower the nematode base population enough so that chemical nematicides will not be needed to be applied. An educational field day will be conducted to evaluate the result of the project in Fall 2006. Impact: Available chemical nematicides are few and vulnerable to regulators recall. Resistant cover crops may be an alternative nematode management tool for farmers.

#### **Ensuring safe, local produce**

Farm food safety is an important concern for the agriculture industry. Buyers

and consumers want to know that the produce they buy is safe to eat.

On Maui, the University of Hawai'i's CTAHR Cooperative Extension Agent **Lynn Nakamura-Tengan**, in collaboration with Extension Agent **Robin Shimabuku** and CTAHR faculty member **Jim Hollyer**, is coordinating a demonstration project to provide clean water for vegetable processing on farms with non-potable water systems. Using clean water to process produce can prevent outbreaks of food-borne illness that could harm our agriculture and visitor industries. The "Solar Pasteurization Demonstration project," which receives support from the County of Maui Office of Economic Development and the Hawaii Agriculture Development Corporation, will ensure that the water used to wash vegetables is not contaminated with bacteria that can make visitors and residents sick. Fruit and vegetable producers need to know which of the alternative technologies available to keep the water used on edible crops clean are most effective and affordable. Here's one project to help Maui farmers grow safe, local produce.

#### **Breeding Hybrid 'Pincushions' at the Maui Agricultural Research Center in Kula Produces World Renowned, Unique Flowers**



Close collaboration between CTAHR staff and the protea growers ensures efforts are directed at growers' needs. Station Manager **Dave Oka** (far left) and County Administrator **Harold Keyser** (center) work with **Carver Wilson**, President of the Protea Growers Association of Hawaii, on direction of the protea improvement program. Not pictured is **Pam Shingaki**, CTAHR Agricultural Technician and master protea breeder.

At the Maui Agricultural Research Center, we continue to hybridize *Leucospermum* "Pincushions" to support our local Protea industry. This year we are concentrating on breeding for early season blooming; particularly to bloom in time for Thanksgiving. Hawai'i growers normally enjoy a slightly earlier blooming season than their main competitors in California and extending it even earlier will give them a significant edge over their competition. We are also selecting and trialing superior *Leucadendron* and Protea  
(See "CTAHR" on page 9)



*("CTAHR" continued from page 8)*

seedlings for future release to local growers. This will help increase their product mix to offer to their customers.

**Diamondback Moth Insecticide Resistance Management Program**



Cabbage with damage from diamond back moth.

A major pest of crucifers is the diamondback moth (DBM, *Plutella xylostella*) that is a year-round problem in Hawaii. Insecticides are needed when damage surpasses economic thresholds. These thresholds are surpassed during most weeks of the year. By 1990, DBM had developed resistance to 5 pesticide classes. Head cabbage growers experienced yield losses of 20 to 40% and in some cases up to 100%.

Work conducted in Hawaii by CTAHR Extension Specialist **Ron Mau** identified five new environmentally friendly formulations from different classes that were effective on DBM. Three of these are registered for use on crucifers and are considered to be reduced risk insecticides (spinosad, emamectin, and indoxacarb). Unfortunately, spinosad resistant DBM strains were found in all major regions just two years after its introduction. A resistance management program successfully mitigated resistance to spinosad and avoided resistance to emamectin and indoxacarb. It was also found that diamondback moths readily migrated among farms within regions and it was important that growers within a region make a concerted effort to adhere to the identical resistance management plan in order that the essential insecticidal tools remain.

In the fall of 2005, a field trial was conducted at Maui County's Kula Agricultural Park by CTAHR Extension Agent **Robin Shimabuku** to evaluate the efficacy of a new reduced risk insecticide, Intrepid (IGR), for the control of the DBM. Results showed the product to be fairly effective when used in conjunction with Bt (*Bacillus thuringiensis*) biological insecticides to control the DBM. A field day was conducted at the end of the demonstration project to provide



growers an opportunity to evaluate the efficacy of the insecticide first hand. Those farmers attending the field day were also able to evaluate new cultivars of spotted wilt virus resistant bell peppers, as seen above.

**Fruit Fly Control Program Partners with 4H for Youth Education in Agriculture**



**Earl Fujitani** (center) demonstrates how to make a simple fruit fly trap to determine population levels and effectiveness of different control methods.

**Linda and Earl Fujitani** from the CTAHR's Maui Agricultural Research Station in Kula talked about Fruit Flies to the Waihee 4-H Afterschool A+ children. Linda explained and showed the 3 different varieties of fruit flies that we have on Maui. Earl took 6 classes of grades Kindergarten to 5<sup>th</sup> grade outside to hang three fruit fly traps and see what types of fruit flies are buzzing around the campus. When they returned a week later, the kids were able to see the traps full of fruit flies of the different varieties. CTAHR's **Esther Yap**, the 4-H Program Assistant at Cooperative Extension, coordinates the 4-H Afterschool program, and invited the Fujitanis to present the fruit fly story to the eager youngsters.

The Hawaii Area Wide Fruit Fly Integrated Pest Management Program is a USDA-Agriculture Research Service funded partnership with the UH CTAHR Cooperative Extension Service and Hawaii State Department of Agriculture. The goal of the program is to develop and implement environmentally acceptable, biologi-

cally based, sustainable pest management strategies that reduce use of organophosphate and carbamate insecticides while suppressing fruit flies to economically manageable levels for the benefit of Hawaii. Components include population monitoring (baseline trapping, grid trapping, host mapping and infestation monitoring) and suppression techniques (field sanitation, male annihilation, protein bait applications and biological controls).

On Maui, the program is coordinated from the Maui Agricultural Research Station in Kula.

**Integrated Pest Management Education**



Integrated Pest Management (IPM) teaches optimum use of available pest control options. Classroom, laboratory (above) and field activities integrate theory with hands-on experience.

In August to November 2005, an Integrated Pest Management (IPM) Program was developed for workers in the landscape and golf course industries in Maui County by **Norman Nagata**, Extension Agent with the UH CTAHR. The impetus for this educational program was based on surveys taken from these stakeholders, which placed a high priority on plant disease and pest management. This program focused on reducing pesticide usage by teaching alternative control practices to lessen its impact to the humans, animals, and the environment. Grants from the County of Maui and the federal IPM program made it possible to bring in experts from the University of Hawaii, Hawaii Department of Agriculture, and the Rocky Mountain Poison & Drug Center in Colorado to instruct these classes. Thirty-four instructional hours were taught on topics relating to plant diseases, insects, weeds, plant diagnoses, pesticide safety and calibration, alternative control measures, environmental and water protection, and poison prevention. The maximum of twenty-four people quickly enrolled shortly after these classes were advertised.

*(See "CTAHR" on page 12)*

## Plans underway for Maui Food Innovation Center

By MIKE ABRAMS

Flavor Waves

### Mission and Purpose

The Maui Food Technology Center (MFTC) has been formed to grow Hawaii's food industry, connecting students, food producers and farmers through the practice of food science.

At the core of the MFTC strategy is the goal of encouraging and supporting entrepreneurship among Hawaii's existing residents. MFTC expects to encourage, train and incubate a wide range of local residents, students, entrepreneurs and struggling agribusinesses seeking to earn a meaningful living from agriculture and value-added food production including culinary arts, food science and food technology.

Entrepreneurs from Maui and throughout the Hawaiian Islands are increasingly responding to a significant and growing demand for local produce and quality food products, as well as demand from local residents who are otherwise paying significant import premiums for a large percentage of their household food products. As a result, those activities have gained renewed attention from public and private sector partners working to grow Hawaii's diversified agriculture and value-added food sectors.

In 2003, over 1,700 residents of Maui County participated in a community visioning process called Focus Maui Nui. Out of that process emerged clear statements of our community's vision, core values and priority strategies. These strategies included endorsing the strengthening of small business and agriculture, as a means to a self-sufficient, sustainable culture and future. Residents saw the tremendous emerging potential of diversified agriculture and the natural resourcefulness of our island residents to create products from locally grown crops and foods.

As a result of this renewed community attention to agriculture, MFTC has been specified as a recommended project in the 2004 Maui County Comprehensive Economic Development Strategy (CEDS).

### Services

MFTC will offer a wide range of services to residents, students, farmers and entrepreneurs including, but not limited to the following:

- Food Product Development
- Recipe Formulation

- Testing Services — food quality attributes, food sensory properties
- Educational Services
- Student Education
- Community Outreach
- Information Services
- Market Research
- Consulting Services

### Goals

MFTC will provide non-profit outreach, and business incubation services designed to identify and develop opportunities for local entrepreneurs to be successful in the agriculture and food product industries. MFTC programs will also work to diversify employment opportunities and support entrepreneurship by partnering with Maui Community College's Culinary Arts Academy to develop and provide a culinology program for students, including developing a career network for graduates.



Maui Community College's Culinary Arts Academy

The primary goals of MFTC are:

- Effective assistance to the Hawaii food & agricultural communities in development and marketing of value-added products derived from Hawaii's agriculture community
- A modern food technology lab facility serving the food product development needs of Hawaii's farmers, food industry and students
- Hawaii's premiere resource for food science and food technology education that attracts, grows and supports the next generation of Hawaii farmers and agribusinesses
- An effective food science and food technology information resource to the Ha-

waii community

- Fiscal sustainability through diversified funding including revenue-generating business with local, national and international clients and grant funding
- Community awareness of food science and food technology industry business, employment and educational opportunities

Effective public, private and nonprofit partnerships that assure collaborative approach

### Social Return on Investment

MFTC has tremendous potential for positive social outcomes. These include, but are not limited to:

- Increased development and availability of value-added food products grown and produced on Maui
- A modern food technology lab facility serving the food product development needs of Hawaii's farmers, food industry and students
- Growth of the next generation of Hawaii farmers and agri-businesses through education and awareness programs
- An effective food science and food technology information resource to the Hawaii community
- Increased community awareness of food science and food technology industry business, career and educational opportunities
- Broadened career choice options for graduating Maui Culinary Arts students
- Reduced dependence on agricultural and food imports
- New business opportunities for the agriculture and food industries on Maui
- Development of new mainland markets for Hawaiian farmed products
- Development of required infrastructure and capacity to incubate agribusiness
- Food technology and Culinology courses and programs available at MCC
- Diversified economy

For more information about the Maui Food Technology Center, contact Jeanne Skog at 875-2300.



***("Molokai Farmers"  
continued from page 5)***

source Conservation Service's Moloka'i Agricultural Development Program.

Individuals selected to attend were production farmers from Hoolehua Hawaiian Homes area including **Castle Adolpho** (taro, watermelon), **Leiff Bush** (taro, watermelon), **Lynn Decoite** (sweetpotato processing-chips), **Russell Decoite** (sweet potato), **Jane Teves** (banana), and **Faith Tuipulotu** (Tongan yam-dioscorea). Accompanying them were **Glenn Teves**, county extension agent, and Councilmember **Danny Mateo**.

Hosted by Dr. **Fred Ziari**, who has received national recognition for his work in wireless technology in agriculture, the Moloka'i group attended workshops that discussed the technology available to farmers in Hermiston, including expert farming systems utilizing GPS, irrigation technology, infrared photography to monitor fields, and wireless technology. They also visited a watermelon farm, toured alfalfa cubing and french fry processing facilities, center pivot irrigation systems, and met with community leaders to discuss agriculture issues including the preservation of agricultural lands.

They also learned about innovative practices such as using windmills to prevent grapevines from freezing, and discovered that agricultural tourism was a booming business throughout Oregon.

Another important lesson learned is that we need to constantly focus on our competitive advantage to maintain an edge over other parts of the state. These advantages can easily disappear with increases in costs of energy, water, freight, and materials. Controlling these costs can be very difficult considering we have little, if any, control over these resources, and much of these costs are dictated by the price of oil. Protecting competitive advantages we now have are critical in maintaining an edge. They would include the price of land, freedom from urban encroachment, relatively low incidence of invasive species, and community support for agriculture.

We need to build upon some of our strengths, and strengthen our weak areas as well. They include the following:

- **Markets:** We appear to have an edge in our proximity to Japan and Korea markets that we're not taking advantage of. This needs to be investigated

and relationships cultivated.

- **Planning:** Agricultural planning hasn't taken place for a while and no coordinated effort is in place to take on critical issues. Plans have been completed for Hawaiian Home Lands, but not implemented. A community advisory group that identifies agricultural issues and attempts to address these issues may be needed. Do we have an agriculture strategy or long range plans to protect and enhance agriculture?
- **Addressing Critical Issues:** Some of these agricultural issues relate to the lack of autonomy, as in the management of the irrigation water system. How can we have more autonomy or control over some of the critical issues?
- **Champions:** There appear to be champions leading some of the agricultural initiatives in Hermiston and Fred Ziari is one of them. Do we have champions on Moloka'i to lead our agriculture initiatives?
- **Strengths and Weaknesses:** Do we know all our strengths? Do we have more that we haven't identified and may be able to exploit? Or, should we identify a weakness and try to strengthen it? Energy costs?
- **New Crops:** Urbanization of other farm areas created opportunities and 'moved' crops to Hermiston. What crops will be moving here due to urbanism? Can we anticipate these and start learning to grow them now?
- **Doing Better with What We've Got:** We have to do better at what we're presently doing, and farming smarter. Some farmers don't like to do research, but this is the difference between a good farmer and a great farmer.
- **The Leading Edge:** In some things, we're ahead of these farmers. The most obvious is pesticides and which ones to use. We have moved from the cheap and toxic, to expensive and safe. The other area is in drip irrigation. We still need to fine-tune this area and build upon our edges.

### Conclusion

As a farmer, and also an extension agent, I have a different view of things than others on the trip. I'm looking for answers and opportunities for others as well as fine tuning what I do as a farmer. I've been able to visit farms over 20+ years in most of the major production areas of the west, including Iowa, Colorado, Texas, California, Washington, and now Oregon. My goal has always been to ask a lot of questions, as if it's your last chance, because there may not be an opportunity to ask this question of a knowledgeable individual again. I can also see shortfalls Moloka'i farmers face right now, such as not utilizing the technology that's available. Some examples include soil sampling, irrigation scheduling, utilizing timers and soil probes to fine tune water needs, and other measurement systems. As a whole, we don't apply important cultural practices such as crop rotation to control pests, so there's lots of basic knowledge we need to apply to our operations. At the same time, technology has a cost, and some of it is very costly.

What is important is cooperation and supporting each other in our ventures. It's about community. Tours such as these build cooperation and allow us to have the trust to work together for the common good. If we get into an "It's about ME syndrome," we're dead as a farming community. Although it's important for each operation to remain solvent, it cannot only be 'me and how can I get ahead.' The bottom line is you cannot do it all if you're the only farmer left.

Dr. Ziari made a profound statement about the importance of technology in agriculture. If we use muscle-to-muscle, China and Mexico will win. We can only win when we use the latest technologies to make our operations more efficient. He showed us many examples of this technology and its applications. Also, his advice to me as an extension agent is to do a few things well instead of being all things to all people. This comes from a scientist and a professional who knows extension well. This has influenced and also galvanized my future focus, one aspect of which is to return to school to get my master's degree. I am amazed and humbled by the ALOHA shared by Dr. Fred Ziari throughout our visit there. His attention to detail, even assuring that we find Portland and get there safely, is truly commendable. We owe him a debt of gratitude.

***("Pineapple" continued from page 2)***

land and water use plan.

Improvements for the future require working capital today. For this reason, ML&P is putting its assets to work. The revitalization of Kapalua Resort will provide the support needed to regenerate profits from pineapple. ML&P has been growing pineapple for more than 100 years and we plan to cultivate the next 100 years with a long term vision that integrates agriculture, higher quality, lower impact tourism, and sustainable communities for our island residents.

***("CTAHR continued from page 9)***

Following this training program, an evaluation revealed that less than 31% of these workers knew what IPM was about and also resulted in an 80% increase in the number of workers who would use alternative control measures before relying on pesticides to control their landscape problems.

For more information about these and other CTAHR programs, contact:

Cooperative Extension, Maui  
310 Kaahumanu Ave., Bldg 214  
Kahului, HI 96732  
Phone: 808 244-3242  
Fax: 808 244-7089  
E-mail: [Kahului@ctahr.hawaii.edu](mailto:Kahului@ctahr.hawaii.edu)

Cooperative Extension, Moloka'i  
P.O. Box 394  
Hoolehua, HI 96729  
Phone: 808 567-6929  
Fax: 808 567-6933  
E-mail: [Molokai@ctahr.hawaii.edu](mailto:Molokai@ctahr.hawaii.edu)

Maui Agricultural Research Center  
429 Mauna Place (P.O. Box 394 – mail)  
Kula, HI 96790  
Phone: 808 878-1214  
Fax: 808 878-6804  
E-mail: [kula@ctahr.hawaii.edu](mailto:kula@ctahr.hawaii.edu)

***("Making progress" continued from page 6)***



Attendees to a recent Kula Ag Park Committee included (from left): Sylvestre Tumbaga, Craig Rasmussen, Geoff Haines, James Giroux, Rick Kiefer, Harold Keyser, Kenneth Yamamura, Greg Knue and Lynn Araki-Regan. Not pictured are Kula Ag Park Committee members Michelle Masuda-Koga, Cecelia Vessel, Randy Griebnow, and Chris Speere.

not had power since 1985 when the park officially opened. Those farmers had to buy and maintain generators at their own expense. Even solar powered timers were used to control irrigation timers.

Finally, OED has embarked on a new water intake project. The current location of the water intake supplying water for Kula Ag Park connects directly to the ditch water flowing to reservoir 40 owned by H C & S Company. An agreement between the County of Maui, HC& S Company and East Maui Irrigation allows the county to take 1.5 million gallons of water a day from the ditch system. As it is now, when the ditch is shut-down for emergency or scheduled maintenance, there will be no water available for the farmers at the park. When the new water intake is relocated to the bottom of reservoir 40, water will be available to the tenants even as the maintenance work continues and there will be no interruption of water service.

OED will continue to work with the tenants of the Kula Agricultural Park in insuring the success of these farming operations. The vision of those responsible for developing this park in the 1980's will be fully appreciated in the future when many private farm lots in Up Country Maui will inevitably be sold as country estates to the rich and lost to the farming industry.

The Kula Agricultural Park will ensure that farming will continue well into the 21<sup>st</sup> Century.

***("Buying local" continued from page 3)***

steady employment and home-based business opportunities?

Each of us has an opportunity to help create the "model" by making deliberate food choices when we go to farmer's markets, grocery stores and health food or specialty food shops. When we support our local farmers, they in turn help to keep dollars circulating on Maui to sustain our local economy. While tourism is our primary source of revenue, it too is subject to global forces that often have little to do with what is actually taking place on Maui. We can help stabilize our economy through those "lean" times by establishing a practice of supporting our local producers.

This means buying local produce, buying products that are locally made and patronizing those businesses and venues that are helping local farmers and manufacturers. Some great examples of local businesses that are helping to create more choices are Ali'i Chang's Lavender Farm, Surfing Goat Dairy, Paradise Farms, Olowalu Tomatoes, So-Moor Jams and Jellies, Kula Farms, Ono Farms and Kula Estate Coffee — just to name a few whose products I have purchased.

Please think about the choices you make the next time you go to the market and if they don't have local products, ask the manager to provide them and make sure they know that you want to support and sustain your local economy by buying Maui County's homemade and home-grown products. There is no better way to help sustain Maui than by "putting your money where your mouth is" — literally.

Your taste buds will appreciate the gesture!!!